WHAT WE CLAIM IS:

1. A liquid for use in liquid immersion lithography, said liquid comprising molecules so that said liquid is substantially transparent at a wavelength used for said liquid immersion lithography, wherein a degree of polarization of light, which is incident on a sample of said liquid in a forward direction and which is scattered in a direction perpendicular to said forward direction within a plane of scattering defined by said forward direction and said direction perpendicular to said forward direction, is larger than 0.9.

2. The liquid according to claim 1, wherein said degree of polarization is larger than 0.95.

3. The liquid according to claim 1, wherein said light incident on said sample in said forward direction is not polarized and wherein said degree of polarization of said light scattered in said direction perpendicular to said forward direction is measured by rotating a polarizer within said plane of scattering defined by said forward direction and said direction perpendicular to said forward direction.

4. The liquid according to claim 3, wherein said degree of polarisation P is defined by $P = I_{perp} / I_{par}$, wherein I_{perp} is an intensity of light measured downstream of said polarizer when a transmission axis of said polarizer is perpendicular to said plane of scattering and wherein I_{par} is an intensity of light measured downstream of said polarizer when a transmission axis of said polarizer is parallel to said plane of scattering.

5. The liquid according to claim 4, wherein said degree of polarisation is measured at a wavelength used for said liquid immersion lithography, said wavelength being in an ultraviolet wavelength range.

6. The liquid according to claim 4, wherein said degree of polarisation is measured at a wavelength within a visible range of optical wavelengths.

7. The liquid according to claim 4, wherein a light source used for producing said light incident on said sample is a laser.

8. The liquid according to claim 1, wherein said liquid is a liquid of high-purity, wherein a concentration of impurities that are not high-symmetric and are present in said liquid is below 10ppm.

9. A liquid for use in liquid immersion lithography, said liquid comprising molecules transparent to UV radiation, wherein said molecules are high-symmetric molecules.

10. The liquid according to claim 9, wherein the high-symmetric molecules have an n-fold rotational axis, wherein n is larger than 2, and at least one of a mirror plane and a centre of inversion.

11. The liquid according to claim 10, wherein a symmetry of said molecules is selected from a group consisting of tetrahedral symmetry, octahedral or icosahedral.

12. The liquid according to claim 11, wherein the tetrahedral symmetry is a symmetry in accordance with point group T_d.

13. The liquid according to claim 11, wherein the octahedral symmetry is a symmetry in accordance with point group O_h.

14. The liquid according to claim 11, wherein the icosahedral symmetry is a symmetry in accordance with a point group selected from I_h and I.

15. The liquid according to claim 10, wherein the concentration of impurities that are not high-symmetric is below 10 ppm.

16. The liquid according to claim 9, said liquid being a mixture comprising at least two different types of high-symmetric molecules.

17. The liquid according to claim 9, wherein an anisotropic part of a polarizability of said molecules is smaller than 15% of an isotropic part of said polarizability.

18. The liquid according to claim 17, wherein said anisotropic part of said polarizability is smaller than 10% of said isotropic part of said polarizability.

19. The liquid according to claim 17, wherein said anisotropic part of said polarizability is smaller than 5% of said isotropic part of said polarizability.

20. The liquid according to claim 17, wherein said isotropic part of said polarizablity is given by an average value of diagonal elements of a tensor of said polarizability in a coordinate system spanned by the main axes of said molecule.

21. The liquid according to claim 17, wherein said anisotropic part of said polarizability is given by difference values of diagonal elements of said tensor of said polarizability in the principle axis system.

22. A liquid for UV immersion lithography, said liquid comprising a compound defined by

$$A(R)_4$$

wherein A is defined to be a 4-valent element and R is selected from $-(C)_n-$ and $-(Si)_n-$, with $n = 1$ to 10, wherein the remaining valences of the carbon or silica are saturated by one (or more) selected from hydrogen and a halogen.

23. The liquid for UV immersion lithography according to claim 22, wherein the 4-valent element is selected from C, Si, Ge, Sn, Pb, Zr, Ti, Te, Se, Hf, Mn, Fe, Co, Ni, Pd, Pt.

24. The liquid for UV immersion lithography according to claim 22, wherein the 4-valent element is selected from C and Si.

25. The liquid for UV immersion lithography according to claim 22, wherein the halogen is one selected from F, Cl and Br.

26. The liquid for UV immersion lithography according to claim 22, wherein R is CF_3.

27. The liquid for UV immersion lithography according to claim 22, wherein R is SiF_3.

28. A method for exposing a photoresist layer on a semiconductor substrate for producing microelectronic circuits or micro-electromechanical systems (MEMS), comprising the steps:

providing a liquid comprising molecules so that said liquid is substantially transparent at a wavelength used for exposing said photoresist layer, so that a degree of polarization of light, which is incident on a sample of said liquid in a forward direction and which is scattered in a direction perpendicular to said forward direction within a plane of scattering defined by said forward direction and said direction perpendicular to said forward direction, is larger than 0.9;

providing said liquid in an interspace formed between an optical element, which is used for exposing said photoresist layer and which is arranged close to a surface of said semiconductor substrate, and said surface of said semiconductor substrate such that said interspace is substantially filled by said liquid; and

exposing said photoresist layer via said optical element for forming patterns in said photoresist layer for procucing said microelectronic circuits or micro-electromechanical systems (MEMS).

29. A method for exposing a photoresist layer on a semiconductor substrate for producing microelectronic circuits or micro-electromechanical systems (MEMS), comprising the steps:

providing a liquid comprising molecules so that said liquid is substantially transparent at a wavelength used for exposing said photoresist layer, which molecules are high-symmetric molecules;

providing said liquid in an interspace formed between an optical element, which is used for exposing said photoresist layer and which is arranged nearest to a surface of said semiconductor substrate, and said surface of said semiconductor substrate such that said interspace is substantially filled by said liquid; and

exposing said photoresist layer via said optical element for forming patterns in said photoresist layer for producing said microelectronic circuits or micro-electromechanical systems (MEMS).

30. A method for exposing a photoresist layer on a semiconductor substrate for producing microelectronic circuits or micro-electromechanical systems (MEMS), comprising the steps:

providing a liquid comprising molecules so that said liquid is substantially transparent at a wavelength used for exposing said photoresist layer, which molecules comprise a compound defined by

$$A(R)_4$$

wherein A is defined to be a 4-valent element and R is selected from $-(C)_n-$ and $-(Si)_n-$, with $n = 1$ to 10, wherein the remaining valences of the carbon or silica are saturated by one (or more) selected from hydrogen and a halogen;

providing said liquid in an interspace formed between an optical element, which is used for exposing said photoresist layer and which is arranged close to a surface of said semiconductor substrate, and said surface of said semiconductor substrate such that said interspace is substantially filled by said liquid; and

exposing said photoresist layer via said optical element for forming patterns in said photoresist layer for producing said microelectronic circuits or micro-electromechanical systems (MEMS).